Yarmouk University

Faculty of Economics and Administrative Sciences

Department of Finance and Banking

The Information Content of Insider Trading

(The Case of Jordanian Companies Listed on Amman Stock Exchange)

المحتوى المعلوماتي لتداولات المطلعين

(دراسة ميدانية على الشركات المدرجة في بورصة عمان)

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Program : Banking & Finance

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Dedication

TO MY PARENTS FOR THEIR LOVE, ENDLESS SUPPORT AND ENCOURAGEMENT

TO MY FAMILY WITH ALL MY LOVE

Acknowledgement

In the name of Allah the Most Gracious, the Most Merciful

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The Information Content of Insider Trading

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Abstract

The purpose of this study is to examine, the profitability of insider trading as a possible test of market efficiency in its semi strong form and strong form. The study includes all listed companies on Amman Stock Exchange during the period 2005-2011. The study uses the empirical market model, namely, calculating daily abnormal return for all insiders transactions during the period.

The results show that:

1) Insiders trading convey useful price information.

2) Insiders selling transactions are more informative than insider buying transactions.

3) Outsiders who imitate insiders are able to achieve abnormal return (avoid losses), in the case of insiders selling transactions.

4) There is a positive relationship between the size of transaction and the profitability of insider trading in the case of selling transactions, and a negative relationship between the size of transaction and the profitability of insider trading in the case of buying transactions.

The study has attempted to examine the information content of insider trading. This topic is very broad and much more research is needed in the future. The researcher suggests the need for further research using different methodologies and different time periods.

Key words: insiders trading, event study, market efficiency.

Chapter One

Introduction

1.1 Preface

1.2 Jordan securities commission disclosure requirements

1.3 Problem of the Study

1.4 Objectives of the Study

1.5 Importance of the Study

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1.1 Preface

Corporate insiders, have monopolistic access to material information that might affect the market value of their firms because of their positions within the firm. Thus, their transactions may convey information about the value of their firms. The focus of insider trading literature is on the profitability of insiders trading to assess the information content of insider trading.

The concept of market efficiency received great attention from accounting and finance academics because of its interest to investors, financial analysts and accounting standard setters. An efficient market is defined as the market in which “security prices fully reflect all available information” Fama (1970, 1991).Therefore, any systematic evidence of non-zero abnormal returns to insiders challenging market efficiency. Specifically, the strong form of market efficiency assumes all public and private information is fully reflected in the price. Therefore, examining the profitability of insider trading is one possible test of strong-form market efficiency. Also, examining the profitability of trading strategy that depends on the disclosed information of insider transactions is one possible test of market efficiency at the semi-strong level.

1.2 Jordan securities commission disclosure requirements

This section presents the articles of Jordan Securities Law No.(76) for the year 2002[1], and instructions of issuing companies disclosure, accounting and auditing standards for the year 2004[2] that related to insiders disclosure requirements.

The securities law defines insider as "a person who possesses inside Information by virtue of his position or job" and defines insider information as "information relating to one or several issuers or to one or several securities which has not been made public and which, if it were made public, would likely affect the price of any such security. This does not include inferences drawn on the basis of economic and financial studies, research and analysis". From this definition, it is obvious that the information has two elements to be considered as inside information: materiality and non-disclosed.

As for regulations in other exchanges, the securities law for the year 2002 prohibit insiders from trading based on inside information under the article 108 which states that "A person shall be in violation of the provisions of this Law, upon committing any of the following acts :

(1) (2) www.jsc.gov.jo

1) Trading in securities or influencing others to trade in such securities on the basis of inside information

2) Using inside or confidential information to attain material or moral gains whether for his own benefit or for the benefit of others, including members of the board of directors and employees of the Market and the Center

3) Disclosing inside information to other than the competent authorities or the Courts.

The Jordan securities commission (JSC) requires through the instructions of “issuing companies disclosure, accounting and auditing standards” insiders and substantial shareholders to disclose their trading transactions to (JSC) within one week. Article 12 of the instructions state that "Any Insider in the issuing Company shall notify the Commission in writing within one week of his election or appointment about any securities issued by this Company, its subsidiaries, affiliates, or sister or parent Company which are owned by himself or his relatives, and shall notify the Commission in writing of any changes to such within one week thereof". Also, article 13 states “Any person acquiring or having, for the first time, disposal of 5% or more of any securities of the same issuing Company shall notify the Commission of such in writing

within one week of occurrence. The said person shall also notify the Commission in writing of any 1% increase in acquisition within one week of such occurrence, and shall disclose motives for any purchase above the 10% rate" .Also, article 13 treats the following persons as insiders: The Chairman of the Board of Directors, The Members of the Board of Directors, The General manger, The Financial Manager, The Internal Auditor, Relatives of the above-mentioned persons. Also, The natural person representing any juristic person occupying such a position shall be considered an Insider.

1.3 Problem of the Study

Corporate insiders may have access to material information that is not available to other market participants. The debate is whether it is fair to trade based on information not available to other market participants. On the other hand, insider trading may improve market efficiency because they realize the value of their firms. In this study the researcher tries to provide evidence about the information content of insider trading in Jordan.

1.4 Objectives of the Study

The main objective of this study is to examine the information content of insider trading in Jordan by analyzing the insider

transactions of Jordanian companies that are listed on Amman Stock Exchange. More precisely, objectives of this study are:

1) Examine the information content of insider trading.
2) Provide insights about market efficiency by examining the profitability of insider trading to insiders (strong-form level) and outsiders who imitate insiders (semi-strong level).
3) Provide evidence about the contrarian nature of Jordanian insiders.
4) Examine transaction specific determinants of insider trading profitability by analyzing the profitability for different insider classes, and different size of transactions.
5) Examine the profitability of different market sectors.

1.5 Importance of the Study

Although there is numerous studies covered insider trading in developed countries (especially in USA) however few examine less developed markets (emerging markets) and no study examines the issue in Jordan or in any other Arab country to the best of researcher knowledge.

Studying the insider trading in emerging market like Amman Stock exchange (ASE) provides empirical evidence about the behavior of

insiders in a market with different structure, different regulations regarding insiders trading, and different enforcement level.

The results of this study should be of interest to regulators and Jordan securities commission to identify whether the insider's trades are based on their private information and used opportunistically to achieve abnormal profit on the expense of other trading participants in the market. Also the results of this study should be of interest to market analysts who use the insider trading data to infer price relevant information.

1.6 Organization of the Study

The study is organized in five chapters. Chapter two provides a literature review of the empirical studies relevant to the current study. Chapter three provides a hypotheses development and discusses the methodology employed by the study to achieve its objectives. Chapter four reports and discusses the results of the study. Chapter five provides conclusions and recommendations.

Chapter Two

Literature Review

2.1 Literature Review

2.2 Distinguished Features of the Study

2.1 Literature Review

Many studies examined insider trading behavior, the profitability of insider trading, the insider trading around major corporate events such as mergers and liquidation, the legal and moral issues surrounding insider trading, and the sources of information abnormal profits. The purpose of this chapter is to summarize the most relevant literature relates to the hypotheses of this study.

Jaffe (1974) examines the profitability of insider trading and the information content of the official summery of insider trading using an initial sample of insider transactions of the 200 largest USA companies during the period from 1962 to 1968 using the Fama-MacBeth Residuals to measure abnormal return. For the purposes of this study, the researcher examines the abnormal return of three different samples (initial sample, sample of large transactions, and sample of intensive insider trading). The results indicate that insiders are able to make abnormal return but only the sample of intensive insider trading earn return more than the trading commission. Specifically, the abnormal return in the following eight months following the event is 3% after taking the brokerage cost into account.

Finnerty (1976) examines the abnormal return of insider trading by investigate the data from security exchange commission official summery of stock transactions for new York stock exchange firms(NYSE) from January 1969 to December 1972. For the total period, 9602 buy transactions and 21487 sell transactions are recorded respectively. To do so, the study constructs an insider buy portfolio and an insider sell portfolio for each month of the time period and weighted each security based on the number of times insiders bought that particular stock and compute the differential returns (the risk premium of an individual security above the market return) for each portfolio in the event month and the following eleven months. The results indicate that insiders are able to outperform the market by identify profitable and unprofitable situations in the short run and most of the abnormal return are realized in the first months. However, the magnitude of differential returns is smaller in the sell portfolio compared with the buy portfolio in the first three months.

Seyhun (1986) evaluates the evidence against the efficient market hypothesis with the previously reported availability of abnormal return to outsiders who imitate insiders by examine the abnormal return of insiders, the abnormal return of outsiders who imitate insiders, the determinants of insiders predictive ability, and

the effect of insider trading on the costs of trading for other investors. To do so, the researcher examines all the transactions of a sample of 790 firms from 1975 to 1981 using the market-model to measure the expected returns to securities. The results indicate that insiders can outperform the market. On the other hand, outsiders who imitate insiders cannot earn significant abnormal return after taking the bid-ask spread as additional cost of trading. Also, the evidence presented in this study found that different insiders possess differences in quality of information and trade greater volumes of stock to exploit more valuable information. Finally, consistent with the hypothesis that the expected loss to inform traders is reflected in the bid-ask spread the evidence shows that the expected loss to insiders and firm size are negatively correlated.

Seyhun (1988) examines the ability of aggregate insider trading to predict the future stock market return by analyzing a sample of insider transactions of 790 USA firms from January 1975 to October 1981.The results indicated that the insiders transactions can predict the market return during the next two months. And that the market future return remain predictable to some extent after the publication of insider trading information but cannot be used to obtain profitable switching strategy between stock market and

treasury bills. Also, they found that the strength of the relationship between aggregate insider trading and market return is positively related to the market risk of the firm.

Rozzef and Zaman (1988) search for the causes of abnormal profit of outsiders who imitating insiders which they termed“ insider trading anomaly”. The researchers argue that the main cause of “insider trading anomaly” is the mismeasurement of abnormal returns that arises from not controlling for the effect of size and price earnings when estimating the abnormal return of insiders. For this purpose, they study a sample of USA firms from January 1973 to December 1982 that met intensive trading criteria. Their results indicate that profits can be earned by outsiders who imitate insiders but the profits decrease substantially when they adjust the abnormal profit for size and price earnings ratio and the profits disappear when they impose a 2% trading cost. Also, the insiders trading profits averages about 3%-3.5% only per year when they adjust the abnormal profit for size and price/earnings ratio and impose a 2% trading cost.

Seyhun (1992) extends the literature on the forecasting ability of aggregate insider trading by examining the forecasting ability of aggregate multi-month insider trading and the relations between

aggregate insider trading and variables associated with business conditions and fundamental values. The researcher analyzed the data of insider trading in publicly held firms from January 1975 to 1989.The overall sample consists of 19571 firms. The results indicate a strong relationship between past aggregate insider trading and future excess stocks returns and that the return predictability increases with the length of forecasting horizon, the number of months of past insider trading, and market sensitivity of stock and decreasing with firm size. Also, the results show that aggregate insider trading is positively correlated with measures of future economic real activity. Finally, the evidence suggests that both the changes in business conditions as well as movements away from fundamental values contribute to the information content of insider trading.

Rozzef and Zaman (1998) investigate the investor overreaction which expects that the price of value stock tend to lie below fundamental values, and prices of growth stocks tend to lie above fundamental values. For this purpose, the researchers investigate the insider trading activity in a sample of USA stocks for the period from 1978 to 1991 categorized each year into deciles based on their cash flow to price ratio. Consistent with the overreaction hypothesis, the results indicate a positive relationship between the

proportion of buy transactions in insider trades and the ratio of cash flow per share to price per share and a negative relationship between prior stock return and the proportion of buy transactions in insider's trades.

Lakonishok and Lee (2001)examine the information content of insider trading by analyzing a database that includes all the companies that trade on NYSE and AMEX and NASAQ markets covering the period from 1975 to 1995.The results indicate that the market shows only a mild response around trading and reporting dates. On the other hand, the results shows that aggregate insider trading can predict the market movements even after adjusting for the simple contrarian strategies and the performance of aggregate insider trading depend on firm size. However, only insider purchases are informative while insider sales are not. Also the researchers explore the informativeness of strong buy and sell signals and find that strong buy signals are informative in small stocks while strong sells are not informative.

Ke et al. (2003) examine weather insider trades are based on their foreknowledge of future earnings announcement. For this purpose, they study the insider's trading behavior over a period of

consecutive earnings increase (defined as a string)that precedes the announcement of earnings decrease (defined as a break).

Earnings increases and decreases are measured relative to the same quarter of the previous year. Consistent with their predictions the results indicate that insider's selling increases in the ninth through third quarters that proceeds a break suggesting that insiders use their private information about future earnings to avoid the negative abnormal return that associated with the announcement of earnings decrease. Also, the study didn't found significant abnormal trading in the two quarters immediately proceed the break consistent with insider’s desire to avoid the risks of regulatory action, shareholder class action suits. However, the noted insider's trading behavior varied depend on firm characteristics, specifically, the insider selling magnitude increase with longer breaks and lager earnings declines following longer strings of consecutive earnings increases for growth firms.

Etebari et al. (2004) investigate the profitability of insider trading in New Zealand and the factors that affect the size of abnormal return in New Zealand by examining the insider trading data of all companies that were listed during the period from January 1995 to December 2001.The researchers used the event study methodology to estimate abnormal security returns due to insider trading. The

results indicate that insiders actively traded in their company shares and earned significant abnormal returns. The cumulative abnormal returns for purchases and sales transactions over the calendar year following transactions were 6.5%and 5.99%, respectively. Consistent with their prediction, the results revealed that insiders earn more abnormal return in smaller companies, and companies that were less followed by analysts, and that the managing directors and chairmen earn higher abnormal return than other insiders, and small transactions resulted in more significant return than large transactions.

Piotsorski and Roulstone (2005) test for two potential sources of insider trading and profits, namely, trading against investor sentiment and trading on the basis of superior cash flow information. To do so, they examined the insider trading data available from 1992 to 1999.Consistent with their expectations they found a positive relation between insider trading and future earnings performance, a positive relation between insider trading and book-to-market ratios and a negative relation between insider trading and past returns. Suggesting that insiders trade on the basis of both contrarian beliefs and private information about future cash flow news. Also, the researchers examine whether cross-sectional differences in information environment, inter -temporal

shifts in insider trading laws and intra-firm differences in the access to information are associated with systematic variation in the observes insider trading-earnings relation. Their results revealed that the relation between insider purchases is stronger in weak information environments. Also, they found that the relation between insider trading and earnings news shifted from current to future earnings news in response to laws with higher enforcement. Finally, the relationship between in insider trading and earnings news is marginally stronger for executives than directors.

Cheuk et al. (2006) examine the profitability of legal insider transactions in Hong Kong to insiders and outsiders who imitate insiders and to examine the firm-specific and transaction-specific factors that affect the magnitude and the significance of abnormal return by investigating a 23675 open market insider transactions of companies that are listed on Hong Kong stock market during the period from January 1993 through December 1998. The standard event study methodology is applied to measure the abnormal return of insider transactions .Their results indicate that insiders are able to make abnormal profits from insider trading activities . However, Contrary to their prediction their results indicate that insider selling transactions are more informative than insider buying transactions. finally, the results indicate that the magnitude

of and duration of abnormal profits depends significantly on firm specific and transaction specific factors and that outsiders who imitate insiders can make abnormal profits by following most of the insider sales transactions when selling, but only selected insider transactions when buying.

Gurgul and Majdosz(2007) investigate two issues related to insider dealing**;** the stock market response to announcements about buying or selling shares by insiders; and the profitability of investment strategies based on the imitation of insider behavior. To do so, they examine 406 insider disclosures which took place on the Warsaw Stock Exchange (WSE) over the period from June 1998 to June 2004 using the event study methodology to test the stock market response to insiders trading disclosures and the reference return portfolio approach to test the profitability of investment strategies based on the imitation of insider behavior. The results indicate a significant positive abnormal return (excess volume)in the context of the disclosure date of insiders who purchase stock in their own companies. On the other hand insider sales have no informational content. Also, they found that outsiders who purchase stock that previously bought by insiders received negative returns and outsiders who sell stock that previously sold by insiders may profit from it.

Jiang and Zaman (2010) re-examine the ability of aggregate insider trading to predict the market return using the vector autoregressive model framework which enable them to determine the source of return predictability. They decompose the realized market return into three components: expected return, unexpected cash flow news, unexpected discount rate news to test the relationship between insider trading and market return. The results suggest that the ability of insider trading to predict the market return is stronger than previously reported in the literature and that the main source of aggregate insider trading is their ability to predict future cash flow news rather than applying a contrarian trading strategy.

2.2 Distinguished Features of the Study

1) Insider trading receives great attention in the last ten years, however, most of research on insider trading has been conducted in the context of developed countries. Thus, the current study hopes to increase our own knowledge of insider trading by studying a market with different structure, enforcement level, and disclosure requirements.

2) The Study thoroughly examines the profitability of insider transactions for different market sectors.

3) The Study use Boehmer et al (1991) test statistic which account for prediction errors and event induced variance which is more conservative compared with the ordinary t-test and standardized t-test.

Chapter Three

Hypotheses Development and Research Methodology

3.1 Hypotheses Development

3.2 Sample and data collection

3.3 Variables specification and empirical models

This chapter will present the hypotheses development and the methodology that has been adopted to test the research hypotheses. Part one introduces the hypotheses, part two provides a detailed discussion of data and sample collection procedures, variable specifications are provided in section three.

3.1 Hypotheses Development

The main objective of this study is to examine the information content of insider trading in Jordanian companies that are listed on Amman Stock Exchange by examining the profitability of insider trading to insiders, the profitability of insider trading to outsiders, and the sources of information content of insider transactions (what is the type of information that insider transactions convey).

There are vast amount of literature that examine the abnormal return the insider can earn by trading the stocks of their companies, the majority of these studies reject the null hypothesis of zero abnormal return. Among others Jaffe (1974), Finnerty (1976), Seyhun (1986), Rozzef and Zaman (1988), Etebari et al. (2004), cheuk etal.(2006)found that insiders are able to earn abnormal return by trading the securities of their firm. Consistent with previous studies, we predict that Jordanian insiders can earn abnormal return by trading the securities of their firms:

Hypothesis 1: Insiders can earn abnormal return by trading securities of their own firms.

If insiders can earn abnormal return this do not imply that outsiders can do so because of the lag between insider trading and the disclosure of their trades and the cost of trade against informed investors which represent a part of transaction cost. That should be taken into consideration before provide definitive conclusions regarding the profitability of outsiders from the disclosure of insider transactions.

The previous literature arrive at mixed results regarding the ability of outsiders to achieve abnormal return based on tracking the disclosures regarding insider trades .Seyhun (1986) report that outsiders who imitate insiders Can earn abnormal return of 1.4% after 100 days and 1.9% after 300 days following the first day insiders reports received by the securities and exchange commission and cannot earn significant abnormal return after taking the bid-ask spread as additional cost of trading. Rozzef and Zaman (1988) reports that that outsiders earn abnormal profit of 6% annually and the profit decrease substantially after they adjust for price earnings ratio and disappear after taking a 2% bid-ask spread into consideration. Cheuk et al. (2006) report that outsiders

who imitate insiders can make abnormal return profits by following most of the insiders sales transactions when selling, but only selected insider transactions when buying. Gurgul and Majdosz (2007) report that outsiders who imitate insiders can make significant profit by following insiders when they selling.

Hypothesis 2: Outsiders who imitate insiders can earn abnormal return by trading securities of their own firms.

The majority of studies on the profitability of insider trading found that insiders are buying stocks after significant drop in security price and selling stocks after significant increase in security price suggesting that insiders are contrarian investors (Seyhun 1988, Rozeff and zaman 1988, 1998). This finding challenges the inferences that relate the insider's predictive ability to their monopolistic access to material non-disclosed information (inside information).

The contrarian trading strategy is a strategy that based on trading against the majority of investors by taking a long position when investors are pessimistic and taking a short position when investors are optimistic. This strategy is motivated by the literature findings of investors overreaction to market news by pushing the prices above intrinsic value in good periods and sending the price below

their intrinsic value in bad periods (i.e.; periods when earnings decrease).

Rozzef and Zaman (1988) is the first study that take the contrarian nature of insiders into consideration when they examine the profitability of insiders trading by controlling for the effect of earnings price ratio when estimating the abnormal return to insiders.

It is important to mention that investor's overreaction is measured in two ways: Depondt and Thaler (1985) measured investor overreaction by examine the stock past returns, they found that past winners tend to be future losers, and vice versa. The second way to measure investor overreaction as the departures of stock prices from their intrinsic values measured by relative valuation ratios such as earnings to price ratio E/P, book values to price ratio B/P, and cash flow to price ratio CF/P. Lakonishok et al. (1994) provide evidence that high E/P, CF/P, B/M Firms have high future returns and low E/P, CF/P, B/M firms have low future returns.

Rozzef and Zaman (1998) provide evidence on investor overreaction. specifically, positive relationship between the proportion of buy transactions in insider trades and the ratio of

cash flow per share to price per share and a negative relationship between prior stock return and the proportion of buy transactions in insiders trades Suggesting that insiders benefit from prices Depart from fair value.

Ke et al. (2003) provide evidence that insiders are better informed about the future profitability of their companies and use their informational advantage to achieve abnormal return. Piotsorski and Roulstone (2005) results indicate that insider's trade on the basis of both contrarian beliefs and private information about future cash flow news. Also, their results indicate that trading on superior knowledge is less important than trading on contrarian belief. However, it is important to mention that their interpretation of the results depend on the accuracy of the assumption that past return and book-to-market ratio accurately reflect investor biased judgment and don't reflect future cash flow news.

Jiang and Zaman (2010) suggest that the predictive ability of aggregate insiders trading is because of the insider's ability to predict future cash flow news rather than from adopting contrarian investment strategy.

Testing the sources of insiders trading profitability is beyond the scope of this study. However, this study try to provide evidence

regarding the contrarian nature of insiders by examine the stock past returns approach.

Hypothesis 3: Insiders tend to buy their stocks after a price decrease and sell stocks after a price increase.

The important question now is about the determinants of profitability for insider trading. In general, the determinants of insider trading profitability are two folds: firm specific determinants and transaction specific determinants. In this study, our focus is on the transaction specific determinants of insider trading, Seyhun (1986), provides evidence that insiders who are closer to day-to-day decision-making trade on more valuable information. Also, the study provides evidence that insiders trade a larger volume of stock when they have more valuable information. Therefore, our hypotheses regarding the determinants of the profitability for insider trading are:

Hypothesis 4: managers and directors have more valuable information than other groups.

Hypothesis 5: there is a positive relationship between the size of transactions (measured in Jordanian Dinars), and the profitability of insider trading.

3.2 Sample and data collection

The sample of this study include all listed companies during the period from Jan 2005 to December 2011, Insiders transactions data of this study come from insider trading disclosures that reported on Amman Stock Exchange website and include all disclosed insiders transactions that taken place during the period from January 2005 to December 2011 and have enough information to implement the analysis. Specifically, the exact date of transactions, the name of the insider, the number of shares purchased or sold and the insider type. Also, the event should have at least the return data for 60 day in the estimation window and all the return data for the event window, to be included in the sample.

3.3 Variables specification and empirical models

The above mentioned hypotheses are tested using the event study framework which is commonly employed in studies that examine the profitability of insider trading.

The procedure for an event study is to define an event of interest and the period over which the securities returns will be examined and the selection criteria for inclusion in the sample. Then characterize the normal return in the absence of the event to

measure the difference between the realized return and "no-event" return (abnormal return), then statistically test the abnormal return to determine if the abnormal returns are significant (Mackinlay, 1997), (Glennand Henderson, 1990).

3.3.1 Event date

Determine the event date is the most important step in event studies brown and Warner (1980, 1985). In testing hypotheses about the profitability of insider trading we will test the profitability of insiders and the profitability of outsiders who mimic insiders. In testing the hypothesis about the profitability of insider trading, the date of transaction is the event date. Also, in order to assess the profitability for outsiders who mimic insiders, we will examine the profitability after the disclosure date, which is defined as the first date that the transaction disclosed on Amman Stock Exchange website.

3.3.2 Characterize normal returns

As mentioned above we should characterize the returns in the absence of event to investigate abnormal return as a result of an event. There are many models that characterize the normal return in event studies; one of the most popular is the market model.

Following most of studies regarding insider trading we use the market model to characterize normal return.

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it}$$

For t from day -220 to day -21 Relative to event date.

Where R_{it} and R_{mt} are, respectively, the return of stock $_i$ adjusted for cash dividends and stock splits, the returns of the market portfolio in day t of the estimation period. α And β are market-model parameters from the estimated period.

3.3.3 Calculating Abnormal Return

Daily abnormal return for stock i on day t of the test period is given by the following equation:

$$AR_{it} = \left(R_{it} - (\alpha_i + B_i R_{mt})\right)W \quad \text{.......For t=-20,19}$$

Where α_i and B_i are two sets of parameters estimated using the ordinary least squares regression of R_{it} on R_{mt} over the estimation period. The Parameter W equal to one if the transaction is purchase and minus one if the transaction is sale.

3.3.4 Measuring Insider trading profitability

For any day in the event period the average abnormal return is calculated by averaging all abnormal returns for that day:

$$AR_t = \frac{1}{n}\sum_{i=1}^{n} AR_{it}$$

Where n is the number of events on event day t.

3.3.5 Test of significance

Boehmer, Musumeci, and Paulson (1991) propose a model by combining the standardized abnormal return method and the ordinary cross-sectional method for testing the significance of abnormal return. Standardizing abnormal returns prevent securities with large variances from dominating the test while the cross-sectional test account for the inflated that the event may introduce.

Kolari and Pynnonen (2010) propose and examine a new test statistic that modifies the BMP-test statistic to take the cross sectional correlation into account of and they found that their test adjusts successfully for cross-sectional and variance inflation in both single and multiple day event windows. However, the

adjustment is necessary in the case of event clustering especially in the case small samples.

In the case of insider trading with numerous events distributed over long period, the cross-sectional correlation is not an issue.

In this section we present the BMP test:

The average daily abnormal return (AR_t) is given by the following equation:

$$\mathbf{AR}_t = \frac{1}{\mathbf{n}}\sum_{\mathbf{i=1}}^{\mathbf{n}} \mathbf{AR}_{it}$$

Where n represent the number of events, the abnormal returns are standardized as follow:

$$SARi = \frac{ARi}{\sigma(ARi)}$$

Where $SARi$ is the standardized abnormal return and $\sigma\,(ARi)$ is standard Deviation of abnormal return in the estimation period, since the abnormal return of a security for the event period is computed from the estimation period the abnormal return represent a prediction error rather than a residual, so the standard deviation of abnormal return is calculated as follow:

$$\sigma\,(ARi) = \sigma\varepsilon \cdot \sqrt{1 + \frac{1}{L} + \frac{(Rmt - Rm)^2}{\sum_{t=1}^{L}(Rmt - Rm)^2}}$$

Where $\sigma\varepsilon$ is the disturbance standard deviation from the regression (Market-Model) and the additional variance due to sampling error, L is the length of the estimation period.

The BMP test statistic on any event day is computed as follow:

$$BMP\ Test = (SARt * \sqrt{N})/SD\ (SAR)$$

Where $SARt$ is the average standardized abnormal return for the event day t and N is the number of events and SD (SAR) is the represents the cross-sectional standard deviation of Standardized abnormal returns.

In order to test the significance over multiple days the Standardized abnormal return for any security aggregated over the period of interest and adjusted for length of period (the number of days being considered):

$$SCARi = \sum SARi\,/\sqrt{L}$$

To test the significance of abnormal return over multiple days

$$BMP\ Test = (SCAR * \sqrt{N}\,)/SD(SCAR)$$

Where $\overline{SCAR}$ represent the average standardized cumulative abnormal return over all events and N represents the number of events and SD (SCAR) is the cross-sectional standard deviation of SCAR.

Chapter Four

Results

4.1 Introduction

4.2 The Profitability of insider transactions for the overall sample

4.3 Determinants of insiders trading profitability for the overall Sample

4.4 The profitability of insider trading for different sectors

4.1 Introduction

This study seeks to provide empirical evidence on the information content of insiders trading; in order to test the hypotheses of this study, the profitability of insiders trading for all insiders transactions and the profitability of buying and selling transactions will be examined separately. For the purpose of calculating Abnormal Return for all insiders trading events (purchases and selling) the abnormal return are calculated using the following equation.

$$AR_{it} = \left(R_{it} - (\alpha_i + B_i R_{mt})\right)W$$

Where W equal 1 if the event is insider buying and equal -1 if the event is insider selling. However, in presenting the results for insider buying and selling individually, the abnormal return for both computed in the ordinary manner (without multiply the abnormal returns of selling events by -1) to facilitate the interpretation of the results.

In order to test the hypothesis regarding the profitability of insider trading the Boehmar et al., (1991) BMP-Test statistic were used, which is assumed distributed unit normal in the case of large samples. The hypotheses of this study were tested at the 5% and 1% level of significance. If the absolute value of BMP test is greater than 1.96 then the average abnormal returns (cumulative abnormal

return in the case of multiple days) is significantly different from zero at the 5% level. If the absolute value of the test is greater than 2.576 then the average abnormal return is significantly different from zero at the 1% level.

For the purpose of examine the profitability of outsiders who follow insiders, the researcher will assess the profitability after the disclosure date. Also, in order to examine the contrarian nature of insiders, the pre-event cumulative abnormal returns will be examined.

4.2 The Profitability of insider transactions for the overall sample

The total transactions analyzed were (58980) Transactions, with (34948) purchase transactions and (24032) sales transactions. Panel A of Table 1 presents the mean Cumulative Abnormal Return (CAR), the standardized cumulative abnormal return (SCAR), and the associated BMP-Test statistic, for the overall Sample at different intervals during the event window. Panel B of Table 1 presents the mean abnormal returns, standardized abnormal return, and the associated BMP-Test statistic at each day during the event window.

Table 1

Panel A: Cumulative Abnormal Returns For All Transactions For the Overall Sample

	All Transactions		
	CAR	SCAR	BMP-Test
Windows		N=58980	
[-20,0)	-0.0003	-0.0085	-1.1074
[-20,-10)	0.0003	0.0032	0.4836
[-10,0)	-0.0006	-0.0153	-2.1508*
[0,10)	0.0032	0.0422	6.7052**
[10,19]	0.0006	0.0024	0.3997
[0,19]	0.0038	0.0316	4.7888**

Panel B: Mean Abnormal Returns For All Transactions For the Overall Sample

	All Transactions		
Day	AR	SAR	BMP-Test
-20	0.0002	0.0063	1.2520
-19	0.0001	0.0021	0.4131
-18	0.0001	0.0065	1.3022
-17	0.0000	-0.0001	-0.0173
-16	0.0000	-0.0001	-0.0249
-15	0.0000	-0.0006	-0.1164
-14	0.0002	0.0070	1.3937
-13	0.0000	-0.0006	-0.1230
-12	-0.0002	-0.0079	-1.6062
-11	0.0000	-0.0023	-0.4614
-10	-0.0001	-0.0062	-1.2772
-9	0.0000	-0.0070	-1.3567
-8	-0.0001	-0.0064	-1.2460
-7	-0.0001	-0.0062	-1.2304
-6	0.0001	0.0030	0.6011
-5	0.0002	0.0079	1.5641
-4	-0.0001	-0.0028	-0.5626
-3	0.0000	0.0012	0.2396
-2	-0.0002	-0.0096	-1.8989
-1	-0.0004	-0.0222	-4.1629**
0	0.0006	0.0209	3.5983**
1	0.0005	0.0198	3.9630**
2	0.0005	0.0234	4.6989**
3	0.0003	0.0164	3.2091**
4	0.0004	0.0197	3.8677**
5	0.0003	0.0111	2.2360*
6	0.0002	0.0059	1.2046
7	0.0002	0.0059	1.1600
8	0.0002	0.0058	1.1362
9	0.0001	0.0046	0.8983
10	0.0000	-0.0021	-0.4037
11	0.0000	0.0005	0.0917
12	0.0001	0.0032	0.6252
13	0.0002	0.0023	0.4453
14	0.0000	-0.0006	-0.1199
15	0.0000	-0.0025	-0.5208
16	0.0001	0.0029	0.5953
17	0.0000	-0.0014	-0.2950
18	0.0001	0.0059	1.1957
19	0.0000	-0.0004	-0.0868

*** Significant at 5% Level**
**** Significant at 1% Level**

Panel A of Table 1 shows a negative cumulative abnormal return (CAR) for the 20-day pre-event window of (-0.03%) not-significant. However, the car for the pre-event interval [-10, 0) was (-0.06%) significant at the 5% level, followed by a positive abnormal return of (0.32%) (Statistically significant at the 1% level). Further examination of the daily abnormal return presented in Panel B of Table 1 indicates that the abnormal returns are concentrated around the event day. Overall, the results are somewhat consistent with prediction. Specifically:

1) Insiders are able to predict the market movements.
2) Insiders tend to purchase (sell) their stocks after a decrease (increase) in prices.

Table 2 presents the profitability and the associated BMP-test statistic for insider buying transactions and selling transactions individually for the overall sample.

Table 2

Panel A: Cumulative Abnormal Returns For Buying and Selling Transactions For the Overall Sample

	Purchases			Sales		
Windows	CAR	SCAR N=34948	BMP-Test	CAR	SCAR N=24032	BMP-Test
[-20,0)	0.0121	0.1494	16.2178**	0.0182	0.2381	18.0599**
[-20,-10)	0.0034	0.0714	8.6645**	0.0041	0.0959	8.5029**
[-10,0)	0.0087	0.1398	16.3572**	0.0141	0.2409	19.8717**
[0,10)	-0.0001	0.0280	3.5723**	-0.0081	-0.0630	-6.0249**
[10,19]	-0.0082	-0.0933	-13.0399**	-0.0133	-0.1416	-13.2999**
[0,19]	-0.0083	-0.0462	-5.8085**	-0.0214	-0.1447	-12.8217**

Panel B: Mean Abnormal Returns For Buying and Selling Transactions For the Overall Sample						
	Purchases			Sales		
Day	AR	SAR	BMP-Test	AR	SAR	BMP-Test
-20	0.0004	0.0240	3.7391**	0.0000	0.0194	2.4206*
-19	0.0004	0.0288	4.5065**	0.0005	0.0369	4.5746**
-18	0.0004	0.0271	4.2683**	0.0003	0.0235	2.9451**
-17	0.0002	0.0164	2.6807**	0.0003	0.0241	3.1456**
-16	0.0002	0.0125	1.9416	0.0003	0.0185	2.3041*
-15	0.0002	0.0153	2.3932*	0.0003	0.0236	2.9106**
-14	0.0005	0.0281	4.4051**	0.0003	0.0237	2.9239**
-13	0.0004	0.0254	4.1269**	0.0007	0.0384	4.9469**
-12	0.0003	0.0194	3.1331**	0.0008	0.0475	5.9714**
-11	0.0005	0.0289	4.6313**	0.0008	0.0477	5.9128**
-10	0.0005	0.0273	4.4436**	0.0010	0.0550	6.9795**
-9	0.0005	0.0287	4.4078**	0.0009	0.0588	7.0479**
-8	0.0006	0.0347	5.3175**	0.0011	0.0662	7.9090**
-7	0.0007	0.0381	5.9315**	0.0012	0.0707	8.5880**
-6	0.0009	0.0451	7.1963**	0.0010	0.0583	7.2163**
-5	0.0009	0.0480	7.4828**	0.0007	0.0503	6.1021**
-4	0.0008	0.0462	7.2755**	0.0014	0.0741	9.0220**
-3	0.0012	0.0559	8.6623**	0.0016	0.0783	9.3027**
-2	0.0013	0.0585	9.0526**	0.0023	0.1088	13.3556**
-1	0.0014	0.0596	8.8129**	0.0030	0.1413	16.4405**
0	0.0027	0.1164	15.7296**	0.0025	0.1179	12.6493**
1	0.0006	0.0346	5.4107**	-0.0003	0.0016	0.2045
2	0.0000	0.0125	1.9669*	-0.0012	-0.0393	-4.9119**
3	-0.0003	-0.0013	-0.1933	-0.0012	-0.0421	-5.0790**
4	-0.0002	0.0065	1.0018	-0.0013	-0.0389	-4.7525**
5	-0.0004	-0.0084	-1.3377	-0.0013	-0.0393	-4.9248**
6	-0.0005	-0.0145	-2.3401*	-0.0012	-0.0356	-4.5052**
7	-0.0006	-0.0190	-2.9559**	-0.0014	-0.0421	-5.0592**
8	-0.0006	-0.0184	-2.8708**	-0.0013	-0.0408	-4.9482**
9	-0.0007	-0.0201	-3.1733**	-0.0013	-0.0405	-4.7224**
10	-0.0009	-0.0270	-4.2104**	-0.0012	-0.0340	-3.8447**
11	-0.0008	-0.0267	-4.2486**	-0.0013	-0.0400	-4.5954**
12	-0.0008	-0.0247	-3.9227**	-0.0014	-0.0437	-5.1541**
13	-0.0008	-0.0311	-4.7959**	-0.0015	-0.0509	-5.8757**
14	-0.0009	-0.0343	-5.5241**	-0.0013	-0.0485	-6.2871**
15	-0.0009	-0.0337	-5.5334**	-0.0013	-0.0429	-5.5510**
16	-0.0007	-0.0280	-4.5332**	-0.0013	-0.0477	-6.1115**
17	-0.0007	-0.0306	-4.9466**	-0.0012	-0.0409	-5.2287**
18	-0.0008	-0.0271	-4.3270**	-0.0014	-0.0538	-6.8277**
19	-0.0008	-0.0320	-5.1955**	-0.0013	-0.0455	-5.9284**

*** Significant at 5% Level**
**** Significant at 1% Level**

Contrary to prediction, Panel A of Table 2 shows that insider buying events are preceded by significantly positive CAR of (1.2%) at 1% level of significance in the pre-event interval [-20, 0). followed by a significantly negative CAR of (0.8%) in the 20 days

post-event interval [0,19] concentrated in the post-event interval [10,19] with a CAR of (-0.82%).

On the other hand, the results in term of insiders selling transactions are consistent with prediction. Specifically, insiders selling events preceded by a statistically significant positive CAR of (1.8%) concentrated in the interval [-10, 0) with a (1.4%) positive CAR Supporting the evidence of the contrarian nature for the insiders. Also, table 2 shows that the CAR in the post-event interval for selling events is statistically significant at the 1% level with a negative CAR of (0.8%, 1.3%) for post-event intervals [0, 10) [10, 19] respectively, Suggesting that insider selling are more informative compared with insider buying events. Interestingly, while the selling transactions are lower (around 41% of total transactions) it seems that insider selling transactions derived the previously reported results for the overall sample.

To assess the profitability of outsiders who imitate insiders, Table 3 presents the time lag between the event day and disclosure day, in this study we define disclosure date as the first day the transaction disclosed on Amman Stock Exchange website, and the time lag is measured based on the number of trading days between the event day and the disclosure day.

Also, table 3 provides a descriptive statistics about the time lag between the event date and the disclosure date measured in term of trading days.

Table 3: Time lag between the event date and the disclosure dateFor the Overall Sample

			Percentiles					
	Mean	**Std.Div**	**10%**	**25%**	**50%**	**90%**	**95%**	**99%**
All Transactions	3.5876	3.7936	1	2	3	6	8	17
Buying Transactions	3.5915	4.0382	1	2	3	6	8	18
Selling Transactions	3.5821	3.4069	1	2	3	6	7	14

As shown from table 3, the average time lag between the event day and disclosure day doesn't differ between buying and selling transactions. And the 95% percentile rank was 8 days suggesting that outsiders who imitate insiders could earn a cumulative abnormal return in the case of selling transactions (avoid losses). Noting that all the daily abnormal return are negative and statistically significant from day 9 to day 19, and the 10-day post-event [10, 19] CAR was (-1.33%), which is significant in term of magnitude and significant level.

4.3 Determinants of insiders trading profitability for the overall Sample

In this section, the researcher examines the determinants of insider trading profitability for the overall sample. Specifically, this section will present the cumulative abnormal return (CAR), and the standardized cumulative abnormal return (SCAR), and the

associated BMP-test, for different size of transactions, insider classes for the overall Sample, and for insider buying transactions and insider selling transactions separately.

4.3.1 The profitability of insider trading for different insider classes

In this section, the researcher examines the profitability for insider transactions for different insiders classes classified on the basis of their disclosure requirements and their closeness to daily decision making:

the first group represents the “management and directors” group which includes top executives, presidents, vice precedents, CFOs, CEOs, internal auditors, officers, chairman, members of board of directors whether or not they are in large shareholders group, group two are the “large shareholders” who own more than 5% and not in “management and directors” group, group three include all “others” who required to disclose their transactions to Jordan securities commission and not represented in any other group.

Table 4 presents the cumulative abnormal returns, and standardized cumulative abnormal returns, and BMP- test statistics for each group. As indicated from the table, “management and directors” group represent around (80%) of the total insider events,

suggest that “management and directors” group are frequent traders relative to other groups.

Table 4: The Profitability of Insider Trading Classified by Insider Classes for All Transactions for the Overall Sample

	All Transactions		
Windows	**CAR**	**SCAR**	**BMP-Test**
	Management and Directors Group , N= 47168		
[-20,0)	-0.0026	-0.0301	-3.5316**
[-20,-10)	-0.0005	-0.0078	-1.0345
[-10,0)	-0.0021	-0.0348	-4.5339**
[0,10)	0.0031	0.0415	5.9179**
[10,19]	0.0008	0.0052	0.7676
[0,19]	0.0038	0.0330	4.5032**
	Large shareholders Group , N= 10827		
[-20,0)	0.0108	0.0987	5.1644**
[-20,-10)	0.0043	0.0569	3.6035**
[-10,0)	0.0065	0.0828	4.3045**
[0,10)	0.0042	0.0532	3.4905**
[10,19]	0.0000	-0.0062	-0.4248
[0,19]	0.0042	0.0332	2.0684*
	Others Group , N= 985		
[-20,0)	-0.0125	-0.1540	-3.9033**
[-20,-10)	-0.0036	-0.0571	-1.6096
[-10,0)	-0.0089	-0.1608	-3.7277**
[0,10)	-0.0013	-0.0434	-1.1687
[10,19]	-0.0025	-0.0349	-0.9645
[0,19]	-0.0038	-0.0554	-1.4484

* Significant at 5% Level
** Significant at 1% Level

As table 4 shows, the pre-event CAR for the 20-day pre-event interval from [-20, 0) differ among insider classes. Specifically, the pre-event CAR is negative for all groups except for large shareholders groups. The CARs for “management and directors” group, and “others” group are around -0.26%, -1.25% and statistically significant supporting the well documented contrarian nature of insiders. Also, the positive pre-event CAR of around (1.1%) for “large shareholders” group (statistically significant at the 1% level) for the 20-day pre-event interval could be explained by

the different disclosure requirements by Jordan securities committee (JSC), note that JSC require any person acquiring 5% for the first time to notify JSC in writing within one week, (article 13, Instructions of issuing companies disclosure, accounting and auditing standards for the year 2004) suggesting that the cumulative abnormal pre-event could be explained by the pressure on securities price during the acquiring period.

In respect with the CARs for the 20-day post-event interval (including the event day), table 4 shows a statistically significant positive CAR of around (0.38%) for “management and directors” group (significant at the 1% level), and a positive CAR of around (0.4%) for “Large shareholders” group (statistically significant at the 5% level). Suggesting that insiders transactions convey price relevant information.

Table 5 presents Cumulative abnormal returns for buying and selling transactions individually, for different insiders groups for the overall sample.

Table 5: The Profitability of Insider Trading Classified by Insider Classes for Buying and Selling Transactions for the Overall Sample

Windows	Purchases			Sales		
	CAR	SCAR	BMP-Test	CAR	SCAR	BMP-Test
	Management and Directors Group , N= 27891			Management and Directors Group , N= 19277		
[-20,0)	0.0085	0.1160	11.4726**	0.0185	0.2415	16.3844**
[-20,-10)	0.0020	0.0540	5.8944**	0.0042	0.0973	7.6052**
[-10,0)	0.0064	0.1100	11.9845**	0.0143	0.2442	18.6151**
[0,10)	0.0010	0.0448	5.1673**	-0.0061	-0.0368	-3.1381**
[10,19]	-0.0061	-0.0664	-8.4855**	-0.0108	-0.1087	-8.9945**
[0,19]	-0.0052	-0.0153	-1.7378	-0.0169	-0.1029	-8.1314**
	Large shareholders Group , N= 6403			Insider type =3 , N= 4424		
[-20,0)	0.0300	0.3234	13.6645**	0.0170	0.2265	7.2549**
[-20,-10)	0.0101	0.1633	8.0620**	0.0042	0.0971	3.8903**
[-10,0)	0.0199	0.2941	12.5367**	0.0128	0.2232	6.9721**
[0,10)	-0.0045	-0.0320	-1.6422	-0.0168	-0.1765	-7.2685**
[10,19]	-0.0172	-0.2068	-11.2150**	-0.0249	-0.2841	-12.1297**
[0,19]	-0.0217	-0.1689	-8.5032**	-0.0416	-0.3257	-12.4498**
	Others Group , N= 654			Insider type =4 , N= 331		
[-20,0)	-0.0087	-0.1304	-2.8909**	0.0201	0.2007	2.6270**
[-20,-10)	-0.0046	-0.0859	-2.0749*	0.0015	0.0001	0.0018
[-10,0)	-0.0040	-0.0986	-2.0964*	0.0186	0.2837	3.2168**
[0,10)	-0.0036	-0.1011	-2.2189*	-0.0031	-0.0706	-1.1095
[10,19]	-0.0076	-0.1307	-2.8405**	-0.0076	-0.1543	-2.7337**
[0,19]	-0.0112	-0.1639	-3.5152**	-0.0107	-0.1590	-2.4390*

* Significant at 5% Level
** Significant at 1% Level

As indicated from table 5, no group shows a positive significant post-event abnormal return for buying events for the interval [0, 19]. However, the table shows a low positive CAR of (0.1%) significant at the 1% level for "management and directors" group compared with a negative non-significant abnormal return for "large shareholders" group in the interval [0, 10), suggesting that "management and directors" buying events are more informative than "large shareholders" buying events.

As shown from table 5, all groups show a negative post-event abnormal CAR of -1.7%, -4.16% and -1.07% for "management and

directors", "large shareholders" and "others" groups, respectively. Suggesting that "large shareholders" group are far more informative in terms of magnitude and statistical significance.

Overall, the post-event CAR is consistent with prediction for buying events, and the post-event CAR for selling events are contrary with our prediction.

4.3.2 The profitability of insider trading for different size of transactions

In order to assess the profitability for different size of transactions, we divide the size of transactions into five groups measured in Jordanian dinar amount defined as the quantity traded at the event day multiplied by the closing price at the event date. Classified as follow:

Group one represent all events with value traded less than 1000 JD, group two represent all events with value traded between 1000 JD and 10000 JD, group three represent all events with value traded between 10000 JD and 50000 JD, group four represent all events with value traded between 50000 JD and 100000 JD, and group five represent all events with value traded more than 100000 JD.

Table 6 presents the cumulative abnormal return classified by the value traded of transactions measured in Jordanian dinar amount.

Table 6: Cumulative Abnormal Return Grouped by the size of Transaction for the Overall Sample

	All Transactions		
Windows	**CAR**	**SCAR**	**BMP-Test**
	Size of transaction<1000 JD , N =7335		
[-20,0)	-0.0091	-0.0951	-6.0316**
[-20,-10)	-0.0026	-0.0434	-2.8189**
[-10,0)	-0.0065	-0.0912	-5.9706**
[0,10)	0.0014	0.0186	1.2088
[10,19]	0.0026	0.0331	2.2139*
[0,19]	0.0040	0.0366	2.3331*
	1000 JD<= Size of transaction<10000 JD , N =16004		
[-20,0)	-0.0046	-0.0488	-3.6814**
[-20,-10)	-0.0023	-0.0234	-1.9264
[-10,0)	-0.0024	-0.0457	-3.6972**
[0,10)	0.0033	0.0483	4.2725**
[10,19]	0.0007	0.0039	0.3565
[0,19]	0.0040	0.0369	3.1651**
	10000 JD<= Size of transaction<50000 JD , N =15542		
[-20,0)	0.0026	0.0226	1.4219
[-20,-10)	0.0028	0.0412	2.9536**
[-10,0)	-0.0002	-0.0092	-0.6600
[0,10)	0.0043	0.0519	3.9942**
[10,19]	-0.0004	-0.0180	-1.3637
[0,19]	0.0039	0.0239	1.7191
	50000 JD<= Size of transaction<100000 JD , N =6056		
[-20,0)	0.0032	0.0296	1.0742
[-20,-10)	0.0019	0.0213	0.9055
[-10,0)	0.0013	0.0205	0.8699
[0,10)	0.0056	0.0819	4.0480**
[10,19]	0.0017	0.0188	0.9958
[0,19]	0.0073	0.0712	3.3534**
	Size of transaction>=100000 JD , N =14043		
[-20,0)	0.0047	0.0317	1.8393
[-20,-10)	0.0014	0.0081	0.5780
[-10,0)	0.0033	0.0367	2.1555*
[0,10)	0.0019	0.0198	1.4550
[10,19]	0.0000	0.0003	0.0215
[0,19]	0.0018	0.0142	1.0017

Note: value traded computed as the quantity purchased (sold) multiplied by closing price at the event date (day 0)
*** Significant at 5% Level**
**** Significant at 1% Level**

Consistent with prediction, the table shows that the profitability of insider events increase as the size of transaction increase.

Table 7 presents the cumulative abnormal return classified by the value traded of transactions for buying and selling transactions measured in Jordanian dinar amount.

Table 7: Cumulative Abnormal Return Grouped by the size of Transaction for Buying and Selling Transactions for the Overall Sample

	Purchases			Sales		
Windows	**CAR**	**SCAR**	**BMP-Test**	**CAR**	**SCAR**	**BMP-Test**
	value traded<1000 , N =5529			**value traded<1000 , N =1806**		
[-20,0)	-0.0100	-0.0880	-5.4058**	0.0060	0.1171	2.9075**
[-20,-10)	-0.0030	-0.0366	-2.2546*	0.0012	0.0639	1.6922
[-10,0)	-0.0070	-0.0878	-5.4595**	0.0049	0.1017	2.6926**
[0,10)	0.0003	0.0094	0.5703	-0.0046	-0.0469	-1.2650
[10,19]	0.0021	0.0286	1.7520	-0.0041	-0.0470	-1.3589
[0,19]	0.0024	0.0269	1.6045	-0.0087	-0.0665	-1.7551
	1000<=value traded<10000 , N =10080			**1000<=value traded<10000 , N =5924**		
[-20,0)	-0.0009	0.0179	1.2206	0.0110	0.1624	6.3380**
[-20,-10)	-0.0019	0.0064	0.4444	0.0029	0.0740	3.3726**
[-10,0)	0.0010	0.0190	1.3723	0.0081	0.1557	6.5976**
[0,10)	0.0022	0.0531	4.0529**	-0.0052	-0.0402	-1.9234
[10,19]	-0.0041	-0.0448	-3.5854**	-0.0088	-0.0868	-4.2309**
[0,19]	-0.0019	0.0059	0.4373	-0.0140	-0.0898	-4.1390**
	10000<=value traded<50000 , N =8675			**10000<=value traded<50000 , N =6867**		
[-20,0)	0.0165	0.1958	9.6591**	0.0150	0.1961	7.8209**
[-20,-10)	0.0055	0.1043	5.7787**	0.0007	0.0385	1.7694
[-10,0)	0.0110	0.1726	9.9390**	0.0144	0.2388	10.7046**
[0,10)	0.0035	0.0714	4.0622**	-0.0053	-0.0272	-1.4114
[10,19]	-0.0073	-0.0849	-5.8288**	-0.0083	-0.0665	-2.8323**
[0,19]	-0.0038	-0.0095	-0.5556	-0.0136	-0.0662	-2.8867**
	50000<=value traded<100000 , N =3292			**50000<=value traded<100000 , N =2764**		
[-20,0)	0.0250	0.2942	8.0733**	0.0229	0.2857	6.9584**
[-20,-10)	0.0083	0.1463	4.7245**	0.0058	0.1275	3.5577**
[-10,0)	0.0167	0.2699	8.5282**	0.0171	0.2765	8.0307**
[0,10)	-0.0043	-0.0012	-0.0601	-0.0174	-0.1808	-6.0213**
[10,19]	-0.0136	-0.1585	-6.4091**	-0.0200	-0.2299	-8.0984**
[0,19]	-0.0179	-0.1130	-4.0139**	-0.0375	-0.2904	-9.1574**
	value traded>=100000 , N =7372			**value traded>=100000 , N =6671**		
[-20,0)	0.0354	0.3878	17.2956**	0.0293	0.3618	14.0773**
[-20,-10)	0.0107	0.1694	9.0473**	0.0089	0.1700	8.0811**
[-10,0)	0.0247	0.3791	16.8715**	0.0204	0.3416	13.6190**
[0,10)	-0.0059	-0.0306	-1.6902	-0.0105	-0.0755	-3.6694**
[10,19]	-0.0202	-0.2318	-13.6601**	-0.0222	-0.2567	-14.2252**
[0,19]	-0.0261	-0.1855	-9.8049**	-0.0327	-0.2349	-11.1799**

Note: value traded computed as the quantity purchased multiplied by closing price at the event date (day 0)
*** Significant at 5% Level**
**** Significant at 1% Level**

Contrary to our prediction, table 7 shows that for buying transactions, the post-event CAR decrease as the size of transaction increase.

On the other hand, and consistent with prediction, the results show that the post-event CAR increase as the size of transactions increase.

4.4 The profitability of insider trading for different sectors

In this section, the study will present the profitability of insiders transactions for different sectors for all transactions (purchases and sales) and for buying and selling transactions individually.

4.4.1 The Profitability of insider trading for banking sector

In this section, we will present the mean abnormal returns, standardized abnormal returns, and the associated BMP-test for the transactions analyzed for banking sector, the total transactions analyzed were (1869) Transactions, with (1386) purchase transactions and (483) sales transactions for different windows around the day of the event and For each day in the event window from -20 to 19 relative to the event day.

Table 8

Panel A: Cumulative Abnormal Returns For All Transactions In Banking Sector

	All Transactions		
	CAR	SCAR	BMP-Test
Windows		N=1869	
[-20,0)	-0.0070	-0.0838	-3.6015**
[-20,-10)	-0.0027	-0.0501	-2.2423*
[-10,0)	-0.0042	-0.0684	-2.7697**
[0,10)	0.0053	0.0950	4.0631**
[10,19]	-0.0010	-0.0257	-1.1564
[0,19]	0.0043	0.0490	2.2393*

Panel B: Mean Abnormal Returns For All Transactions In Banking Sector

	All Transactions		
Day	AR	SAR	BMP-Test
-20	-0.0010	-0.0584	-2.3716*
-19	-0.0004	-0.0218	-0.9138
-18	-0.0009	-0.0518	-2.1185*
-17	-0.0003	-0.0224	-0.9240
-16	0.0002	0.0121	0.5064
-15	0.0001	-0.0011	-0.0441
-14	0.0002	0.0096	0.3972
-13	0.0005	0.0251	1.0316
-12	-0.0006	-0.0313	-1.2659
-11	-0.0005	-0.0186	-0.7543
-10	-0.0008	-0.0357	-1.5148
-9	-0.0009	-0.0483	-1.9273
-8	0.0000	0.0032	0.1322
-7	0.0000	-0.0043	-0.1762
-6	0.0003	0.0169	0.6669
-5	0.0000	-0.0077	-0.3076
-4	-0.0004	-0.0287	-1.1658
-3	-0.0004	-0.0177	-0.7172
-2	-0.0004	-0.0102	-0.4143
-1	-0.0016	-0.0838	-3.2087**
0	0.0001	0.0061	0.2256
1	0.0010	0.0605	2.3941*
2	0.0006	0.0419	1.6143
3	0.0009	0.0525	2.1462*
4	0.0003	0.0161	0.6610
5	0.0006	0.0357	1.4661
6	0.0003	0.0122	0.5162
7	0.0002	0.0147	0.6008
8	0.0009	0.0486	2.0118*
9	0.0002	0.0121	0.4999
10	0.0002	0.0040	0.1642
11	0.0001	0.0094	0.3736
12	-0.0008	-0.0475	-1.9047
13	-0.0002	-0.0100	-0.4039
14	0.0003	0.0131	0.5466
15	0.0000	0.0025	0.1032
16	0.0002	0.0029	0.1186
17	-0.0001	-0.0143	-0.6111
18	0.0001	0.0052	0.2148
19	-0.0007	-0.0465	-1.9515

*** Significant at 5% Level**
**** Significant at 1% Level**

As indicated from table 8, we observe a negative pre-event CAR of (-0.7%) for the interval from [-20, 0) followed by a positive significant CAR of (0.43%) for the post-event interval [0, 19] (both significantly different from zero at 1%, 5% significant level respectively). Consistent with previous evidence CAR is statistically significant negative for both pre-event intervals [-20, -10) and [-10, 0) supporting the contrarian nature of insiders. Further examination of the post-event daily abnormal return reveal that the post-event abnormal returns are of short-term nature and concentrated in around the event date in terms of magnitude and significant level.

Table 9 presents the results for buying transactions and selling transactions individually.

Table 9

Panel A: Cumulative Abnormal Returns For Buying and Selling Transactions In Banking Sector

	Purchases			Sales		
	CAR	SCAR	BMP-Test	CAR	SCAR	BMP-Test
Windows		N=1386			N=483	
[-20,0)	-0.0039	-0.0519	-2.0231*	0.0159	0.1752	3.3995**
[-20,-10)	-0.0033	-0.0609	-2.3990*	0.0013	0.0190	0.4087
[-10,0)	-0.0006	-0.0125	-0.4448	0.0146	0.2288	4.5189**
[0,10)	0.0057	0.0984	3.5869**	-0.0041	-0.0852	-1.9115
[10,19]	-0.0018	-0.0442	-1.7099	-0.0015	-0.0271	-0.6194
[0,19]	0.0038	0.0383	1.5267	-0.0056	-0.0794	-1.7926

Panel B: Mean Abnormal Returns For Buying and Selling Transactions In Banking Sector

	Purchases			Sales		
Day	AR	SAR	BMP-Test	AR	SAR	BMP-Test
-20	-0.0008	-0.0421	-1.5287	0.0016	0.1050	1.9781*
-19	0.0001	0.0029	0.1081	0.0017	0.0926	1.8222
-18	-0.0009	-0.0559	-1.9955*	0.0011	0.0400	0.8015
-17	-0.0009	-0.0520	-1.8667	-0.0013	-0.0627	-1.2886
-16	-0.0007	-0.0349	-1.2620	-0.0027	-0.1468	-3.1230**

-15	0.0001	0.0018	0.0632	0.0000	0.0092	0.1938
-14	0.0003	0.0123	0.4266	0.0001	-0.0020	-0.0442
-13	0.0006	0.0294	1.0511	-0.0002	-0.0128	-0.2598
-12	-0.0003	-0.0169	-0.5932	0.0013	0.0727	1.4568
-11	-0.0008	-0.0373	-1.2916	-0.0004	-0.0353	-0.7561
-10	-0.0006	-0.0280	-1.0272	0.0012	0.0581	1.2270
-9	-0.0006	-0.0304	-1.0585	0.0020	0.0996	1.9527
-8	0.0006	0.0291	1.0615	0.0015	0.0712	1.4572
-7	0.0002	0.0026	0.0935	0.0006	0.0241	0.4983
-6	0.0005	0.0227	0.7664	0.0002	-0.0003	-0.0067
-5	0.0004	0.0144	0.4880	0.0013	0.0714	1.4881
-4	-0.0002	-0.0169	-0.5920	0.0010	0.0624	1.2923
-3	0.0001	0.0073	0.2561	0.0019	0.0894	1.8649
-2	-0.0002	0.0000	0.0016	0.0012	0.0395	0.8030
-1	-0.0008	-0.0404	-1.3406	0.0036	0.2082	4.0139**
0	0.0012	0.0649	2.0946*	0.0029	0.1628	3.0360**
1	0.0014	0.0839	2.8389**	0.0000	0.0065	0.1333
2	0.0005	0.0381	1.2671	-0.0007	-0.0530	-1.0252
3	0.0010	0.0541	1.8663	-0.0006	-0.0478	-1.0596
4	0.0003	0.0088	0.3048	-0.0004	-0.0370	-0.8186
5	0.0005	0.0281	0.9927	-0.0010	-0.0575	-1.2029
6	-0.0002	-0.0197	-0.7208	-0.0020	-0.1035	-2.2150*
7	-0.0003	-0.0152	-0.5397	-0.0017	-0.1006	-2.0601*
8	0.0008	0.0488	1.7422	-0.0010	-0.0481	-1.0052
9	0.0005	0.0193	0.6917	0.0003	0.0086	0.1770
10	0.0001	0.0032	0.1143	-0.0003	-0.0063	-0.1282
11	-0.0003	-0.0128	-0.4336	-0.0013	-0.0730	-1.5183
12	-0.0008	-0.0463	-1.5927	0.0009	0.0511	1.0486
13	0.0001	0.0134	0.4596	0.0013	0.0773	1.6315
14	-0.0004	-0.0269	-0.9576	-0.0024	-0.1280	-2.8445**
15	0.0002	0.0091	0.3262	0.0004	0.0166	0.3594
16	-0.0001	-0.0144	-0.5082	-0.0009	-0.0525	-1.1721
17	-0.0005	-0.0360	-1.3241	-0.0009	-0.0482	-1.0632
18	0.0002	0.0040	0.1432	0.0001	-0.0085	-0.1794
19	-0.0004	-0.0329	-1.1853	0.0015	0.0857	1.8393

*** Significant at 5% Level**
**** Significant at 1% Level**

Table 9 shows a negative significant CAR of around (0.4%) at the 5% level of significance for buying transactions for the pre-event window [-20, 0) followed by a positive non-significant CAR of (0.38%) in the post-event interval [0, 19]. Also, the table shows a positive significant CAR of (0.57%) for the post-event day from [0, 10) concentrated in days 0 and 1 in terms of significant and magnitude. For selling transactions the table shows positive CAR of

(1.46%) in the pre-event interval [-10, 0) significant at the 1% level followed by a negative abnormal return in the post-event period (not statistically significant).

Also, table 10 provides a descriptive statistics about the time lag between the event date and the disclosure date measured in term of trading days for the banking sector.

Table10:Time lag between the event date and the disclosure date for banking sector

			Percentiles					
	Mean	**SD**	**10%**	**25%**	**50%**	**90%**	**95%**	**99%**
All Transactions	3.7822	3.8162	1	2	3	7	10	22
Buying Transactions	3.8709	4.0737	1	2	3	7	10	23
Selling Transactions	3.5280	2.9443	1	2	3	7	9	17

4.4.2 The Profitability of insider trading for Insurance sector

For insurance sector, the total number of transactions analyzed was (4525), (2968) buying transactions and (1557) selling transactions.

Table 11 presents cumulative abnormal returns and the standardized cumulative abnormal return for different windows around the event and for each day in the event window.

Table 11

Panel A: Cumulative Abnormal Returns For All Transactions In Insurance Sector

	All Transactions		
	CAR	SCAR	BMP-Test
Windows		N=4525	
[-20,0)	0.0083	0.0638	2.7313**
[-20,-10)	0.0036	0.0469	2.3203*
[-10,0)	0.0047	0.0434	1.9103
[0,10)	0.0072	0.1000	4.2787**
[10,19]	0.0027	0.0194	0.6355
[0,19]	0.0099	0.0844	2.9069**

Panel B: Mean Abnormal Returns For All Transactions In Insurance Sector

	All Transactions		
Day	AR	SAR	BMP-Test
-20	0.0007	0.0269	1.6317
-19	0.0005	0.0246	1.4814
-18	-0.0001	-0.0010	-0.0602
-17	-0.0001	-0.0127	-0.7789
-16	0.0007	0.0298	1.8171
-15	0.0009	0.0352	2.0868*
-14	0.0002	0.0080	0.4863
-13	0.0003	0.0138	0.8289
-12	0.0002	0.0146	0.8493
-11	0.0003	0.0092	0.5401
-10	0.0006	0.0265	1.5751
-9	-0.0001	-0.0117	-0.6898
-8	0.0007	0.0181	1.0827
-7	0.0010	0.0333	1.9407
-6	0.0012	0.0448	2.6406**
-5	0.0005	0.0205	1.1746
-4	0.0008	0.0290	1.6363
-3	-0.0002	-0.0076	-0.4249
-2	0.0006	0.0150	0.8403
-1	-0.0004	-0.0308	-1.5970
0	0.0021	0.1055	3.9789**
1	0.0012	0.0485	2.6112**
2	0.0008	0.0354	1.9411
3	0.0001	-0.0029	-0.1565
4	0.0005	0.0335	1.8512
5	0.0007	0.0381	2.2573*
6	0.0004	0.0201	1.1846
7	0.0003	0.0013	0.0696
8	0.0003	0.0203	1.0746
9	0.0007	0.0164	0.6711
10	0.0002	-0.0012	-0.0510
11	0.0003	-0.0098	-0.4053
12	0.0007	0.0183	0.7692
13	0.0008	0.0253	1.0404
14	0.0002	0.0124	0.7172
15	0.0001	0.0079	0.4788
16	0.0002	0.0042	0.2522
17	-0.0001	-0.0091	-0.5579
18	0.0001	0.0080	0.4739
19	0.0002	0.0051	0.3080

*** Significant at 5% Level**
**** Significant at 1% Level**

As shown in table 11, consistent with prediction we observe a positive CAR of around (0.83%) significant at the 1% level for the pre-event window from [-20, 0) followed by a positive abnormal return of (0.72%) significant at the 1% level for the Post-event interval [0, 10) and a positive abnormal return of (0.27%) for the post-event window [10, 19]. However, we didn't observe any evidence of the well documented contrarian nature of insiders.

Table 12 presents the abnormal return for purchases and sales transactions individually.

Table 12

Panel A: Cumulative Abnormal Returns For Buying and Selling Transactions In Insurance Sector

	Purchases			Sales		
	CAR	SCAR	BMP-Test	CAR	SCAR	BMP-Test
Windows		N=2968			N=1557	
[-20,0)	0.0211	0.1865	6.8556**	0.0163	0.1700	3.9302**
[-20,-10)	0.0080	0.1127	4.7261**	0.0049	0.0785	2.1189*
[-10,0)	0.0131	0.1511	5.6291**	0.0114	0.1620	3.9343**
[0,10)	0.0098	0.1488	5.4832**	-0.0021	-0.0069	-0.1574
[10,19]	-0.0032	-0.0336	-1.3391	-0.0140	-0.1202	-1.6153
[0,19]	0.0066	0.0815	2.8606**	-0.0161	-0.0899	-1.3926

Panel B: Mean Abnormal Returns For Buying and Selling Transactions In Insurance Sector

	Purchases			Sales		
Day	AR	SAR	BMP-Test	AR	SAR	BMP-Test
-20	0.0009	0.0322	1.5790	-0.0004	-0.0166	-0.5966
-19	0.0010	0.0552	2.6869**	0.0006	0.0337	1.1951
-18	0.0000	0.0056	0.2790	0.0003	0.0135	0.4961
-17	0.0006	0.0206	1.0412	0.0015	0.0762	2.6830**
-16	0.0010	0.0453	2.2367*	-0.0002	-0.0002	-0.0073
-15	0.0007	0.0312	1.5197	-0.0011	-0.0429	-1.4496
-14	0.0009	0.0326	1.6364	0.0011	0.0389	1.3460
-13	0.0011	0.0497	2.4430*	0.0012	0.0546	1.8931
-12	0.0010	0.0489	2.3018*	0.0013	0.0508	1.7425
-11	0.0007	0.0350	1.6884	0.0006	0.0400	1.3461
-10	0.0013	0.0539	2.6506**	0.0005	0.0257	0.8644
-9	0.0006	0.0190	0.9305	0.0015	0.0701	2.3384*
-8	0.0011	0.0385	1.8882	0.0002	0.0208	0.7129
-7	0.0018	0.0693	3.3475**	0.0006	0.0354	1.1670
-6	0.0019	0.0739	3.5933**	0.0001	0.0106	0.3562
-5	0.0017	0.0675	3.1829**	0.0016	0.0690	2.2560*

-4	0.0019	0.0747	3.4507**	0.0013	0.0583	1.9055
-3	0.0007	0.0257	1.1793	0.0018	0.0709	2.2945*
-2	0.0015	0.0493	2.2059*	0.0012	0.0504	1.7086
-1	0.0006	0.0059	0.2435	0.0025	0.1008	3.1878**
0	0.0038	0.1655	6.0997**	0.0012	0.0089	0.1566
1	0.0017	0.0675	2.9893**	-0.0002	-0.0122	-0.3758
2	0.0017	0.0798	3.6235**	0.0007	0.0493	1.5323
3	0.0007	0.0322	1.4929	0.0010	0.0697	2.0646*
4	0.0008	0.0456	2.1578*	-0.0001	-0.0104	-0.3070
5	0.0010	0.0515	2.5005*	-0.0002	-0.0126	-0.4273
6	0.0003	0.0229	1.1053	-0.0006	-0.0148	-0.5004
7	-0.0002	-0.0081	-0.3769	-0.0012	-0.0193	-0.5064
8	0.0002	0.0108	0.5144	-0.0006	-0.0383	-1.0220
9	-0.0002	0.0029	0.1424	-0.0022	-0.0422	-0.7107
10	-0.0012	-0.0444	-2.1013*	-0.0030	-0.0810	-1.4171
11	-0.0003	-0.0191	-0.9505	-0.0014	-0.0081	-0.1372
12	0.0003	0.0164	0.7865	-0.0014	-0.0219	-0.3871
13	0.0000	0.0098	0.4641	-0.0023	-0.0547	-0.9447
14	-0.0005	-0.0153	-0.7177	-0.0017	-0.0652	-2.2054*
15	-0.0001	0.0040	0.2002	-0.0006	-0.0153	-0.5300
16	-0.0005	-0.0192	-0.9368	-0.0014	-0.0489	-1.6653
17	-0.0003	-0.0161	-0.8069	-0.0003	-0.0043	-0.1506
18	-0.0001	-0.0052	-0.2579	-0.0005	-0.0333	-1.0976
19	-0.0004	-0.0171	-0.8607	-0.0014	-0.0475	-1.5674

*** Significant at 5% Level**
**** Significant at 1% Level**

Panel A of Table 12 shows a positive CAR of (2.1%) for the 20 days pre-event interval (significant at 1% level) followed by a statistically positively significant post-event CAR of around (1%) for buying transactions concentrated around the event day. On the other hand, for insider selling, the table shows a pre-event negative CAR of (1.63%) for the 20 days pre-event interval [-20, 0) supports the claim that insiders are contrarian traders. Specifically, insiders selling activity is preceded by a cumulative positive abnormal return (significantly different from zero at all pre-event intervals).

In order to assess the profitability of outsiders who imitate insiders, table 13 provides a descriptive statistics about the time lag between the event date and the disclosure date measured in term of trading days.

Table 13:Time lag between the event date and the disclosure date for insurance sector

			Percentiles					
	Mean	**SD**	**10%**	**25%**	**50%**	**90%**	**95%**	**99%**
All Transactions	3.5752	3.2376	1	2	3	6	**8**	16
Buying Transactions	3.6176	3.4801	1	2	3	6	9	19
Selling Transactions	3.4945	2.7154	1	2	3	6	8	13

As the table shows, the 95% percentile rank is 8 days. Suggesting that outsiders who imitate insiders are likely earn a post-event abnormal return in the case of selling events (noting that the CAR for [10, 19] interval is -1.4%).

4.4.3 The Profitability of insider trading in Services Sector

For Services sector, the total number of transactions analyzed was (43308) transactions with (25055) buying transactions and (18253) selling transactions.

Table 14 presents the cumulative abnormal returns (CAR), the Standardized abnormal return (SCAR), and the associated BMP-test statistic for all insiders transactions in the services sector.

Table 14

Panel A: Cumulative Abnormal Returns For All Transactions In Services Sector

	All transactions		
	CAR	**SCAR**	**BMP-Test**
Windows		**N=43308**	
[-20,0)	-0.0005	-0.0120	-1.3158
[-20,-10)	0.0003	0.0000	0.0021
[-10,0)	-0.0007	-0.0170	-2.0027*
[0,10)	0.0024	0.0298	4.0138**
[10,19]	0.0005	0.0033	0.4724
[0,19]	0.0028	0.0234	3.0583**

Panel B: Mean Abnormal Returns For All Transactions In Services Sector

	All transactions		
Day	**AR**	**SAR**	**BMP-Test**
-20	0.0002	0.0044	0.7418
-19	0.0000	-0.0012	-0.2018
-18	0.0002	0.0086	1.4513
-17	0.0000	0.0008	0.1415
-16	0.0000	-0.0018	-0.3023
-15	-0.0001	-0.0021	-0.3469
-14	0.0002	0.0094	1.5865
-13	0.0000	-0.0026	-0.4609
-12	-0.0002	-0.0089	-1.5591
-11	-0.0001	-0.0066	-1.1303
-10	-0.0002	-0.0084	-1.4878
-9	0.0000	-0.0032	-0.5372
-8	-0.0002	-0.0083	-1.3644
-7	-0.0001	-0.0103	-1.7339
-6	0.0000	-0.0017	-0.2865
-5	0.0002	0.0095	1.6072
-4	-0.0001	-0.0042	-0.7202
-3	0.0001	0.0034	0.5628
-2	-0.0002	-0.0124	-2.0994*
-1	-0.0003	-0.0181	-2.9021**
0	0.0005	0.0124	1.8957
1	0.0004	0.0142	2.4545*
2	0.0003	0.0159	2.7531**
3	0.0003	0.0134	2.2469*
4	0.0003	0.0184	3.1045**
5	0.0002	0.0059	1.0159
6	0.0001	0.0024	0.4105
7	0.0002	0.0040	0.6773
8	0.0001	0.0027	0.4557
9	0.0001	0.0048	0.8310
10	-0.0001	-0.0053	-0.8854
11	0.0000	0.0004	0.0731
12	0.0001	0.0059	1.0200
13	0.0001	0.0027	0.4555
14	0.0000	-0.0029	-0.5106
15	0.0000	-0.0012	-0.2127
16	0.0001	0.0051	0.8953
17	0.0001	0.0002	0.0285
18	0.0001	0.0069	1.1881
19	0.0000	-0.0015	-0.2634

*** Significant at 5% Level**
**** Significant at 1% Level**

As indicated from Panel A of Table 14, the results are somewhat consistent with prediction in terms of sign of CAR in the 20-day pre-event window and 20-day post-event window. Further examination of post event CAR indicates that only the post event sub-period [0, 10) CAR is statistically different from zero suggesting that the abnormal returns after the event period are of short-term nature.

Table 15 shows the results for insiders buying transactions and insiders selling transactions individually.

Table 15

Panel A: Cumulative Abnormal Returns For Buying and Selling Transactions In Services Sector

	Purchases			**Sales**		
	CAR	**SCAR**	**BMP-Test**	**CAR**	**SCAR**	**BMP-Test**
Windows		**N=25055**			**N=18253**	
[-20,0)	0.0120	0.1654	14.5559**	0.0176	0.2555	17.3002**
[-20,-10)	0.0035	0.0847	8.4482**	0.0042	0.1163	9.2543**
[-10,0)	0.0085	0.1492	14.2688**	0.0133	0.2451	17.6361**
[0,10)	-0.0023	0.0052	0.5538	-0.0087	-0.0635	-5.3121**
[10,19]	-0.0101	-0.1150	-13.5671**	-0.0149	-0.1656	-14.5729**
[0,19]	-0.0123	-0.0776	-8.1624**	-0.0236	-0.1620	-12.9610**

Panel B: Mean Abnormal Returns For Buying and Selling Transactions In Services Sector

	Purchases			**Sales**		
Day	**AR**	**SAR**	**BMP-Test**	**AR**	**SAR**	**BMP-Test**
-20	0.0004	0.0270	3.4838**	0.0000	0.0266	2.8733**
-19	0.0003	0.0301	3.9381**	0.0005	0.0441	4.7396**
-18	0.0004	0.0356	4.6715**	0.0002	0.0285	3.0715**
-17	0.0002	0.0222	3.0365**	0.0002	0.0286	3.2837**
-16	0.0003	0.0203	2.6282**	0.0005	0.0321	3.4576**
-15	0.0002	0.0190	2.4743*	0.0004	0.0310	3.3091**
-14	0.0006	0.0334	4.3646**	0.0002	0.0236	2.5319*
-13	0.0004	0.0277	3.7874**	0.0007	0.0442	5.0120**
-12	0.0002	0.0227	3.1047**	0.0008	0.0523	5.7805**
-11	0.0004	0.0299	4.0346**	0.0008	0.0566	6.1098**
-10	0.0004	0.0298	4.0790**	0.0010	0.0608	6.8580**
-9	0.0005	0.0352	4.5406**	0.0006	0.0560	5.8586**
-8	0.0005	0.0345	4.4307**	0.0010	0.0670	6.9539**
-7	0.0007	0.0382	4.9976**	0.0012	0.0769	8.1519**
-6	0.0008	0.0442	5.9264**	0.0010	0.0646	7.0442**
-5	0.0008	0.0491	6.4532**	0.0005	0.0448	4.7649**
-4	0.0008	0.0469	6.2415**	0.0013	0.0743	8.0145**
-3	0.0012	0.0611	7.9934**	0.0015	0.0759	7.8985**
-2	0.0013	0.0606	7.9285**	0.0023	0.1126	12.2152**
-1	0.0016	0.0723	9.0467**	0.0029	0.1421	14.4655**
0	0.0027	0.1179	13.4455**	0.0026	0.1323	13.5150**

1	0.0004	0.0274	3.6685**	-0.0004	0.0039	0.4282
2	-0.0004	-0.0048	-0.6318	-0.0013	-0.0443	-4.9185**
3	-0.0006	-0.0127	-1.6499	-0.0014	-0.0492	-5.2327**
4	-0.0005	0.0005	0.0705	-0.0014	-0.0430	-4.6135**
5	-0.0007	-0.0190	-2.5381*	-0.0013	-0.0400	-4.3791**
6	-0.0007	-0.0227	-3.0545**	-0.0012	-0.0367	-4.0456**
7	-0.0008	-0.0240	-3.1210**	-0.0015	-0.0425	-4.5070**
8	-0.0008	-0.0234	-3.0545**	-0.0013	-0.0385	-4.1304**
9	-0.0009	-0.0228	-3.0331**	-0.0014	-0.0428	-4.7283**
10	-0.0010	-0.0297	-3.8493**	-0.0011	-0.0281	-2.9219**
11	-0.0010	-0.0311	-4.1060**	-0.0014	-0.0437	-4.6849**
12	-0.0010	-0.0281	-3.7324**	-0.0016	-0.0526	-5.7976**
13	-0.0010	-0.0402	-5.1347**	-0.0016	-0.0617	-6.6079**
14	-0.0012	-0.0455	-6.1473**	-0.0015	-0.0556	-6.2872**
15	-0.0012	-0.0473	-6.5265**	-0.0017	-0.0620	-7.0170**
16	-0.0009	-0.0355	-4.8405**	-0.0016	-0.0609	-6.7696**
17	-0.0009	-0.0345	-4.6365**	-0.0014	-0.0477	-5.2921**
18	-0.0010	-0.0333	-4.4639**	-0.0016	-0.0620	-6.8526**
19	-0.0010	-0.0385	-5.2767**	-0.0014	-0.0494	-5.6142**

*** Significant at 5% Level**
**** Significant at 1% Level**

As table 15 shows, the results for buying transactions contradict the previous evidence in the pre-event and post-event intervals. Specifically, there is a significantly positive CAR of around (1.2%) in the pre-event 20-day interval followed by a significantly negative abnormal return of (-1.2%) in the [0, 19] post-event interval.

In terms of insider selling the results are consistent with prediction and previous findings. Specifically, we found a positive statistically significant CAR of around (1.76%) in the 20-day pre-event window mostly concentrated in the pre-event interval [-10, 0) with a CAR of (1.33%) and a negative statistically significant CAR of (-2.36%) in the 20-day post-event interval mostly concentrated in the post-event interval [10, 19] of around (-1.5%) suggesting a delayed reaction (note that all ARs are negative and

statistically significant in the [10, 19] interval), As Panel B of Table 15 shows.

Also, table 16 provides a descriptive statistics about the time lag between the event date and the disclosure date measured in term of trading days.

Table 16:Time lag between the event date and the disclosure date for services sector

			Percentiles					
	Mean	**SD**	**10%**	**25%**	**50%**	**90%**	**95%**	**99%**
All Transactions	3.4690	3.3477	1	2	3	6	7	14
Buying Transactions	3.4132	3.3191	1	2	3	6	7	14
Selling Transactions	3.5456	3.3852	1	2	3	6	7	13

As indicated from table 16, outsiders who imitate insiders are able to earn abnormal returns if they follow insiders in selling events (noting that the CAR for [10, 19] interval is -1.5%).

4.4.4 The profitability of Insider trading in Industrial Sector

For Industrial sector, the total number of transactions analyzed was (9278) transactions, (5539) buying transactions and (3739) selling transactions. The abnormal returns, standardized abnormal return, and the associated BMP-test statistics are presented in the following table (Table 17) for different intervals and for each day during the event window.

Table 17

Panel A: Cumulative Abnormal Returns For All Transactions In Industrial Sector

	All Transactions		
	CAR	SCAR	BMP-Test
Windows		N=9278	
[-20,0)	-0.0022	-0.0125	-0.5997
[-20,-10)	-0.0003	0.0078	0.4126
[-10,0)	-0.0019	-0.0255	-1.3918
[0,10)	0.0048	0.0615	3.8872**
[10,19]	0.0004	-0.0040	-0.2673
[0,19]	0.0052	0.0407	2.4953*

Panel B: Mean Abnormal Returns For All Transactions In Industrial Sector

	All Transactions		
Day	AR	SAR	BMP-Test
-20	0.0004	0.0180	1.4403
-19	0.0002	0.0111	0.8621
-18	0.0001	0.0122	0.9718
-17	0.0000	0.0065	0.5196
-16	-0.0002	-0.0094	-0.7373
-15	-0.0002	-0.0110	-0.8863
-14	-0.0003	-0.0053	-0.4144
-13	-0.0003	-0.0034	-0.2699
-12	-0.0002	-0.0094	-0.7232
-11	0.0001	0.0153	1.1969
-10	-0.0002	-0.0060	-0.4586
-9	-0.0002	-0.0138	-1.0207
-8	-0.0002	-0.0117	-0.8632
-7	-0.0002	-0.0069	-0.5213
-6	0.0000	0.0015	0.1130
-5	0.0000	-0.0024	-0.1834
-4	-0.0002	-0.0067	-0.4982
-3	0.0001	-0.0007	-0.0509
-2	-0.0002	-0.0087	-0.6456
-1	-0.0007	-0.0251	-1.8115
0	0.0003	0.0223	1.4661
1	0.0006	0.0241	1.8072
2	0.0010	0.0489	3.7643**
3	0.0007	0.0326	2.4436*
4	0.0006	0.0196	1.4690
5	0.0006	0.0170	1.3307
6	0.0004	0.0142	1.1394
7	0.0004	0.0151	1.1958
8	0.0003	0.0043	0.3366
9	-0.0001	-0.0036	-0.2820
10	0.0002	0.0113	0.9099
11	-0.0001	0.0039	0.3174
12	-0.0002	-0.0068	-0.5537
13	0.0000	-0.0083	-0.6796
14	0.0002	0.0012	0.0942
15	-0.0002	-0.0146	-1.1882
16	-0.0001	-0.0081	-0.6579
17	0.0001	-0.0026	-0.2092
18	0.0001	0.0004	0.0301
19	0.0004	0.0111	0.8903

*** Significant at 5% Level**
**** Significant at 1% Level**

As indicated from Panel A of Table 17, the insider trading events are preceded by a negative CAR of (-0.2%) for the pre-event 20-day interval (not statistically significant) followed by a positive CAR of (0.52%) in the post-event 20-day interval (significant at the 5% level). However, the table shows a positive CAR of (0.48%) for the post-event [0, 10) interval (statistically significant at the 1% level).

Further examination of the daily abnormal returns presented in Panel B of Table 17 suggest that the abnormal return are of short-term nature, noting that the abnormal returns are concentrated around the event and start to diminish in terms of magnitude and statistical significance after that.

Table 18 presents the results for insider purchases and insiders sales transactions individually.

Table 18

Panel A: Cumulative Abnormal Returns For Buying and Selling Transactions In Industrial Sector						
	Purchases			**Sales**		
	CAR	**SCAR**	**BMP-Test**	**CAR**	**SCAR**	**BMP-Test**
Windows		**N=5539**			**N=3739**	
[-20,0)	0.0116	0.1072	4.9043**	0.0227	0.1899	4.7260**
[-20,-10)	0.0020	0.0223	1.0600	0.0038	0.0137	0.3932
[-10,0)	0.0096	0.1294	6.3614**	0.0189	0.2548	7.5782**
[0,10)	0.0028	0.0486	2.5348*	-0.0079	-0.0807	-2.9742**
[10,19]	-0.0039	-0.0393	-2.1219*	-0.0067	-0.0484	-1.9567
[0,19]	-0.0011	0.0065	0.3307	-0.0146	-0.0913	-3.2704**
Panel B: Mean Abnormal Returns For Buying and Selling Transactions In Industrial Sector						
	Purchases			**Sales**		
Day	**AR**	**SAR**	**BMP-Test**	**AR**	**SAR**	**BMP-Test**
-20	0.0006	0.0222	1.4450	-0.0001	-0.0116	-0.5558
-19	0.0004	0.0156	0.9473	0.0001	-0.0046	-0.2189
-18	0.0006	0.0212	1.3272	0.0007	0.0011	0.0558
-17	0.0002	0.0051	0.3317	0.0003	-0.0085	-0.4073
-16	-0.0004	-0.0286	-1.7749	-0.0001	-0.0191	-0.9317
-15	0.0001	-0.0070	-0.4567	0.0007	0.0169	0.8135
-14	-0.0002	0.0053	0.3338	0.0005	0.0209	0.9779
-13	-0.0001	0.0012	0.0758	0.0005	0.0103	0.4829

-12	0.0001	-0.0023	-0.1466	0.0005	0.0198	0.9026
-11	0.0007	0.0379	2.3760*	0.0008	0.0181	0.8514
-10	0.0005	0.0158	0.9996	0.0013	0.0382	1.7124
-9	0.0007	0.0192	1.1378	0.0015	0.0627	2.7975**
-8	0.0008	0.0348	2.0589*	0.0017	0.0805	3.6221**
-7	0.0004	0.0299	1.8004	0.0012	0.0615	2.7943**
-6	0.0008	0.0394	2.4925*	0.0012	0.0547	2.4627*
-5	0.0009	0.0409	2.4944*	0.0013	0.0667	2.9809**
-4	0.0009	0.0435	2.6795**	0.0019	0.0811	3.5020**
-3	0.0014	0.0609	3.6628**	0.0020	0.0919	4.0104**
-2	0.0018	0.0684	4.1479**	0.0031	0.1230	5.3895**
-1	0.0014	0.0564	3.3038**	0.0037	0.1458	6.3046**
0	0.0023	0.0961	5.2549**	0.0026	0.0869	3.3092**
1	0.0009	0.0375	2.2002*	-0.0001	-0.0043	-0.1986
2	0.0009	0.0483	3.0308**	-0.0011	-0.0497	-2.2680*
3	0.0002	0.0187	1.1336	-0.0014	-0.0532	-2.3844*
4	0.0002	0.0120	0.7073	-0.0013	-0.0308	-1.4335
5	-0.0002	-0.0017	-0.1063	-0.0017	-0.0448	-2.0949*
6	-0.0002	0.0035	0.2254	-0.0012	-0.0301	-1.4514
7	-0.0001	-0.0029	-0.1844	-0.0011	-0.0416	-1.9853*
8	-0.0006	-0.0281	-1.7599	-0.0017	-0.0525	-2.4361*
9	-0.0007	-0.0298	-1.8375	-0.0008	-0.0352	-1.6743
10	-0.0005	-0.0128	-0.8345	-0.0011	-0.0469	-2.2795*
11	-0.0005	-0.0143	-0.9502	-0.0006	-0.0308	-1.5121
12	-0.0007	-0.0257	-1.6756	-0.0007	-0.0213	-1.0552
13	-0.0007	-0.0228	-1.4880	-0.0010	-0.0132	-0.6548
14	0.0000	0.0041	0.2640	-0.0004	0.0031	0.1552
15	-0.0002	-0.0031	-0.2025	0.0001	0.0317	1.5537
16	-0.0002	-0.0017	-0.1122	-0.0001	0.0175	0.8679
17	-0.0004	-0.0194	-1.2775	-0.0008	-0.0223	-1.0826
18	-0.0004	-0.0184	-1.1559	-0.0008	-0.0281	-1.3789
19	-0.0003	-0.0102	-0.6375	-0.0014	-0.0428	-2.1506*

*** Significant at 5% Level**
**** Significant at 1% Level**

As Panel A of Table 18 shows insider purchases are preceded by a statistically positive CAR of around (1.16%) during the 20-day pre-event period (significant at the 1% level). In the post-event interval [0, 10), we can observe a positive CAR of around 0.3% (statistically different from zero at 5% level) followed by a statistically significantly negative CAR on the [10, 19] interval. On the other hand, the table shows that insiders selling are preceded by a positive CAR of (2.27%) on the 20-day pre-event period

(significantly different from zero at 1% level) followed by a negative statistically significant CAR of (-1.46%) on the 20-day post-event period, suggesting insiders ability to time the market. Further examination of the market reaction to insider's selling events indicates that the market reacts immediately to insider selling transactions.

Also, table 19 provides a descriptive statistics about the time lag between the event date and the disclosure date measured in term of trading days for industrial sector.

Table 19:Time lag between the event date and the disclosure date for industrial sector

			Percentiles					
	Mean	**SD**	**10%**	**25%**	**50%**	**90%**	**95%**	**99%**
All Transactions	4.1084	5.5489	1	2	3	7	10	27
Buying Transactions	4.3140	6.4608	1	2	3	7	11	34
Selling Transactions	3.8040	3.7969	1	2	3	6	8	18

Chapter Five

Conclusions and Recommendations

5.1 Conclusions

5.2 Recommendations

5.1 Conclusions:

The main purpose of this section is to present the conclusion derived from the results.

1) In general, the results show that Jordanian insiders are net buyers (the number of buying transactions represents 59% of total transactions).
2) In general, the results show that insiders trading convey useful price information. Specifically, the study shows a statistical positive cumulative abnormal return after insider trading events for the overall sample. However, the abnormal return is low in an economic sense.
3) Regarding the contrarian nature of insiders, the results revealed that insider selling events occur after an increase in prices. However, analyzing insider buying transactions didn't support the contrarian nature of insiders.
4) Analysis of post-event cumulative abnormal returns after buying transactions revealed that outsiders who imitate insiders can earn a significant abnormal returns (avoid losses) in the case of insider selling events. However, the returns are limited and concentrated in first days after the event in the

case of insider buying transactions. Moreover, followed by a significant negative cumulative abnormal return after few days, suggesting that outsiders who mimic insiders should interpret insider buying transactions with great caution.

5) Consistent with prediction, analyzing the abnormal return for different insider types revealed that the "management and directors" buying events are more informative than "large shareholders" buying events. However, analyzing the abnormal return in the case of selling events revealed that "large shareholders" are far more informative than "management and directors" (contrary to our prediction).

6) Contrary to Our prediction, the results suggest a negative relationship between the size of transaction and the profitability of insider trading. On the other hand, and consistent with our prediction, analyzing the relationship between the transaction size and the profitability of selling events show a dramatic positive relationship between them.

5.2 Recommendations:

1) The researcher, based on the above results recommends that insider dealing should not be prohibited by regulators as it may contribute to an increase in market efficiency in ASE. However, regulators should pay more attention to corporate governance issue and adequate disclosure by Jordanian companies.
2) The researcher suggests the need for further research using another time period, other methodology, and study other factors that determine insiders trading profitability.

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المحتوى المعل

وماتي لتداولات المطلعين

(دراسة ميدانية على الشركات المدرجة في بورصة عمان)

ملخص الدراسة

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هدفت هذه الدراسة الى فحص ربحية تداولات المطلعين, كاختبار ممكن لقياس كفاءة السوق في شكله شبه القوي وشكله القوي. شملت الدراسة جميع الشركات الاردنية المسجلة في بورصة عمان خلال الفترة من 2005-2011. استخدمت الدراسة اختبار نموذج السوق, حيث تم احتساب العائد اليومي غير العادي لتداولات المطلعين.

أظهرت الدراسة النتائج التالية:

1. تداولات المطلعين ذات محتوى معلوماتي.

2. عمليات بيع الاشخاص المطلعين ذات محتوى معلوماتي أكبر بالمقارنة مع عمليات الشراء.

3. يستطيع المستثمر المحاكي لتداولات المطلعين تحقيق عوائد غير عادية (تجنب الخسائر) في حالة عمليات البيع.

4. هناك علاقة موجبة بين حجم عملية التداول وربحية تداولات المطلعين في حالة البيع, وعلاقة سالبة بين حجم عملية التداول وربحية تداولات المطلعين في حالة الشراء.

حاولت الدراسة اختبار المحتوى المعلوماتي لتداولات المطلعين, وهذا الموضوع موضوع واسع وبحاجة الى مزيد من الدراسات .و يوصي الباحث بدراسة الموضوع باستخدام نماذج مختلفة وفترات زمنية مختلفة .

كلمات مفتاحية: تداولات المطلعين, دراسة الحدث الاقتصادي, كفاءة السوق